

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF

Inventor(s): O'HARA et al.

Filed: September 28, 1998

Title: Divisional Appl. of GASSER COMPOSITION AND METHOD OF GASSING

August 27, 2001

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents
Washington, D.C. 20231

Sir:

Please amend this application as follows:

IN THE SPECIFICATION:

At the top of the first page, just under the title, insert:

1. X -This is a ☐ Continuation-In-Part ☒ Divisional
☐ Continuation ☐ Substitute Application (MPEP 201.09) of

1(a) X National Application No. 09/091,856 filed September 28, 1998

1(b) International Application No. PCT
filed _____ which designated the U.S.--

2. ☐--This application claims the benefit of U.S. Provisional Application No.
60/____, filed ____--

Respectfully submitted,

PILLSBURY WINTHROP LLP
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By: _____

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF

O'HARA et al.

Group Art Unit: 3641

Divisional Application of
Appln. No.: 09/091,856

Examiner: Miller, E.

Filed: August 27, 2001

FOR: **GASSER COMPOSITION AND
METHOD OF GASSING**

August 27, 2001

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

Please enter and consider the following preliminary amendment prior to examination of this divisional application.

IN THE CLAIMS:

Please cancel claims 2-17, 36, 42, and 43 without prejudice or disclaimer.

Please enter new claims 44-62 as set forth below:

44. A method of forming a gassed emulsion explosive composition comprising

(a) forming a gasser solution comprising a solution of an inorganic nitrite, an ammonium species and optionally an accelerator;

(b) adding the gasser solution to an emulsion explosive composition having a discontinuous aqueous phase comprising inorganic oxygen releasing salts, a continuous water

immiscible organic phase and a poly[alk(en)yl] succinic anhydride based emulsifier such that droplets of gasser composition are distributed throughout the emulsion explosive composition; and

(c) allowing the inorganic nitrite and the ammonium species of the gasser solution to react and form gas which is distributed as bubbles throughout the emulsion to form the gassed emulsion explosive composition;

wherein the gasser solution is formed during or immediately before addition of the gasser solution to the emulsion explosive composition by mixing the inorganic nitrite, ammonium species and optionally the accelerator, and wherein the reaction between the inorganic nitrite and the ammonium species occurs within droplets of the gasser solution such that there is substantially no chemical attack on the emulsifier.

45. A method according to claim 44 wherein the emulsifier is a polyisobutylene succinic anhydride based emulsifier.

46. A method according to claim 44 wherein the gasser solution has a pH between pH 5 and pH 9.

47. A method according to claim 46 wherein the gasser solution has a pH between pH 6 and pH 8.

48. A method according to claim 44 wherein in forming the gasser solution the ratio of inorganic nitrite to ammonium species is between 10:1 and 1:10.

49. A method according to claim 44 wherein in forming the gasser solution the molar proportion of ammonium species is up to 10% greater than the molar proportion of inorganic nitrite.

50. A method according to claim 44 wherein in forming the gasser solution the ammonium species and inorganic nitrite are present in equimolar quantities.

51. A method according to claim 44 wherein in forming the gasser solution the ammonium species and inorganic nitrite are present in equimolar quantities and the gasser solution pH is between pH 5 and pH 9.

52. A method according to claim 44 wherein the ammonium species is selected from the group consisting of ammonium chloride, ammonium nitrate, ammonium chlorate, ammonium perchlorate and combinations thereof.

53. A method according to claim 44 wherein the ammonium species is formed in situ in the gasser composition.

54. A method according to claim 44 wherein the ammonium species comprises up to 25 wt. % of the gasser solution.

55. A method according to claim 44 wherein the inorganic nitrite is selected from the group consisting of alkaline earth nitrites, alkali metal nitrites and combinations thereof.

56. A method according to claim 44 wherein the inorganic nitrite comprises up to 25 wt. % of the gasser solution.

57. A method according to claim 44 wherein the gasser solution comprises an accelerator selected from the group consisting of thiourea, thiocyanate, iodide, cyanate, acetate and combinations thereof.

58. A method according to claim 44 wherein the accelerator comprises up to 25 wt. % of the gasser solution.

59. A method according to claim 44 wherein the gassed emulsion explosive composition has a density of less than 1.0 g/cc.

60. A method according to claim 59 wherein the gassed emulsion explosive composition has a density of less than 0.8g/cc.

61. A method according to claim 44 which additionally comprises adding to the emulsion explosive composition a closed cell void material selected from the group consisting of glass microballoons, plastic microballoons and mixtures thereof.

62. A method according to claim 44, wherein the emulsifier comprises a primary amine, secondary amine, amide, carboxylic acid, ester or anhydride group.

REMARKS

Consideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

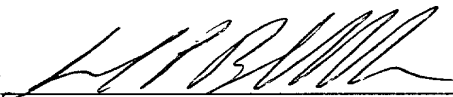
Upon entry of this amendment, claims 44-62 will be pending in the present application.

The above amendments to the claims are supported throughout the specification and no new matter has been added. The above claims are claims 2-17, 36, 42, and 43 from the parent case basically renumbered. Accordingly entry of these amendments is respectfully requested.

It is believed that with the present application is in condition for allowance and an early action to that effect is requested.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 2-17, 36, 42, and 43 have been cancelled.

New claims 44-62 have been added.